American Board of Psychiatry and Neurology
American Board of Radiology
American Board of Surgery
American Board of Urology
American Board of Plastic Surgery
American Board of Neurological Surgery

Detailed information concerning history, personnel, purposes, qualifications for eligibility to certification, examinations, fees, etc., are given for each of the boards mentioned in the *Journal of the American Medical Association* for August 31. Younger members of the profession, who may have in mind ultimate transfer from general to special practice, are urged to read the provisions laid down for the specialties with which, at some future time, they aspire to associate themselves. The ambition of physicians to prepare themselves to do work in which they have a special interest, and according to the best standards, is always laudable, and the continued study for such an objective makes for keenness of perception in both general and special practice.

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These brief comments on two of the features in the Educational Number of the *Journal of the American Medical Association* should indicate why all readers who failed to notice that special issue, should take time to look it over. The factual data presented are as true and pertinent today as when given their initial presentation in the issue of August 31.

Other State Association and Component County Society News.—Additional news concerning the activities and work of the California Medical Association and its component county medical societies is printed in this issue, commencing on page 180.

EDITORIAL COMMENT†

VIRUCIDAL ENZYMES IN NASAL SECRETIONS

Burnet, Lush, and Jackson[1] of Melbourne, Australia, report the discovery of a highly specialized virus-inactivating enzyme in human nasal secretions. Since this enzyme is particularly active against influenza virus, their discovery may conceivably pave the way to an effective clinical control of this disease.

That mucous surfaces are self-sterilizing has long been the opinion of clinicians. The earlier immunologists would account for this sterilization as the result of mechanical cleansing, plus the inhibiting action of traces of humoral antibodies and of lysins set free by disintegrating leukocytes. The first definite proof of a new type of chemical defenses on mucous membranes was the discovery and isolation of the Fleming "lysozyme." Although this relatively simple chemical substance was found to be practically inactive against pathogenic bacteria, it did cause an immediate disintegration of certain nonpathogenic forms (*M. lysodeikticus*). Dold and Weigmann[2] afterward demonstrated other nasal (or salivary) "inhibins," active against diphtheria bacilli. The occasional presence of poliomyelitis-inactivating substances was subsequently reported by Howitt.[3]

The Australian investigators perfected methods of obtaining undiluted nasal secretions in relatively large volumes. A roll of gauze or absorbent cotton was pushed well up into each nostril and withdrawn at the end of thirty to sixty minutes. From each well-soaked plug about one cubic centimeter of nasal secretion could be wrung out by means of artery forceps. Pooled secretions were centrifuged and sterilized by filtration through a gradocol membrane.

Filtered exudates thus prepared were found to inactivate all strains of the influenza virus thus far tested, the reaction reaching a maximum after two hours' incubation at body temperature. The reaction was inhibited at low temperature. The active agent was destroyed by boiling. Many other viruses were tested and found to be wholly unaffected by the filtered secretion. These refractory viruses included: vaccinia, fowl-pox, rabbit myxomatosis, ectromelia of mice, infectious laryngotracheitis of fowls, and pseudorabies. Very slight virucidal effects were demonstrable with psittacosis, poliomyelitis and Rous sarcoma viruses. Well-marked antiseptic action was demonstrable against herpes, louping ill and virus B. Bacteriophages were wholly unaffected by the nasal secretions.

From available chemical evidence Burnet and his coworkers conclude that the virus-inactivating agent is not identical with lysozyme, or any other nasal antiseptic thus far studied. They believe that the virucide is a highly specialized enzyme, relatively specific for a narrow group of viruses. Whether or not the Burnet enzyme plays a significant rôle in the epidemiology of influenza is now the subject of statistical study. Attempts to isolate and identify the enzyme are also in progress.

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ATYPICAL CORONARY OCCLUSION*

In recent years interest in coronary thrombosis has been stimulated by the increased incidence reported within the medical profession as well as among the laity. In our minds, sudden closure of a coronary artery generally elicits a picture of severe chest pain or prolonged substernal oppression. Yet it has been established that painless plugging of a coronary artery does occur when even a large artery is involved.

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† This department of CALIFORNIA AND WESTERN MEDICINE presents editorial comments by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to all members of the California Medical Association to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

1 Burnet, F. M., Lush, Dora, and Jackson, A. V.: Brit. J. Exper. Path., 20: 377, (Oct.), 1939.

2 Dold, H., and Weigmann, F.: Ztschr. Hyg. Infektionskr., 116: 158, 1934.

3 Howitt, B. F., J. Infect. Dis., 60: 113, 1937.

* Condensed from paper read before the Los Angeles Heart Association, February 14, 1940.

In the series of cases published by Davis,[1] approximately 40 per cent were asymptomatic or without a history of pain. The mechanism generally agreed upon is that certain areas of the heart are not only less vital than others, but also less sensitive. But even if not relatively insensitive, they may become so by sclerotic processes occurring in the artery with concomitant fibrotic changes in the myocardium. Upon ageing, the scar tissue contracts obliterating vessels, myocardial fibres and nerves—virtually an auto-anesthetization.

In the recently published studies of Blumgart[2] and coworkers, it is concluded that the syndrome is not always associated with prolonged substernal oppression or severe chest pain, symptoms which usually bear a direct relationship to the degree of myocardial ischemia. When the narrowing of the artery has been sufficiently gradual to permit the development of a compensatory collateral circulation, a final occlusion may be likewise asymptomatic.

Diagnostic difficulty may be minimized by keeping in mind certain pain equivalents expressed in terms of sudden failure of the left ventricle. The pain equivalents are the *immediate* symptoms and signs of acute heart failure including dyspnea, shock, cyanosis or ashen pallor, pulmonary edema and other features of acute cardiac failure.

The *delayed* signs and sequelae are similar to those found in typical occlusion with moderate fever, leukocytosis, increased erythrocyte sedimentation rate, pericardial friction rub, embolic phenomena, various arrhythmias, tachycardias and, finally, the distinguishing electrocardiographic changes.

In brief, atypical coronary occlusion is to be suspected in sudden failure of the left ventricle with acute pulmonary edema. There appears to be, furthermore, a direct correlation between the symptomatology as well as prognosis and the adequacy of the compensatory collateral circulation.

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DANISH TECHNIQUE OF ACTIVE-PASSIVE DIPHTHERIA PROPHYLAXIS

Fjord-Nielsen[1] of the State Serum Institute, Copenhagen, Denmark, currently reports that, with a proper time interval between serum and toxoid injection, a superimposed active-passive diphtheria immunity is clinically possible.

The theoretical possibility of simultaneously immunizing laboratory animals by injecting a mixture of antiserum and homologous toxin was quite effectively ruled out by Th. Smith[2] and other early investigators. In their hands such a mixture is less effective than antitoxin alone, and does not stimulate a later production of active immunity. Nor was combined immunization possible if the serum and toxin were injected separately. Apparently the specific toxin and antitoxin unite to form a nondissociable toxin-antitoxin complex, therapeutically and immunologically inert.

Following recent studies of bacterial toxoids, this early clinical hope has been revived. It is conceivable that toxoids precipitated with aluminum or aluminum hydroxid, for example, might form a dissociable and, therefore, immunologically active complex with homologous antitoxin. If so, a simultaneous injection of specific antiserum and homologous aluminum toxoid might cause an immediate passive immunity, gradually changing into a relatively permanent active immunity. About three years ago this conception was confirmed by Schmidt-Burbach[3] and his coworkers of Berlin, Germany. In their technique, guinea pigs were given antidiphtheritic serum intramuscularly, with a simultaneous injection of diphtheria alum-toxoid subcutaneously. They obtained an immediate passive antitoxic immunity which gradually decreased till the eighth day, when measurable amounts of autogenous antitoxin began to appear in the circulation. This secondary autogenous immunity reached its maximum in about thirty days, and remained at a fairly high level for several months. Over four thousand school children were subsequently tested by the new technique, with statistical results not yet published by the Nazi clinicians.

This new "blitzimmunity," however, was immediately challenged by Frey and Schmid[4] of Vienna, who injected twenty children simultaneously with diphtheria antitoxin and alum-toxoid. The Austrian clinicians found no demonstrable autogenous antitoxin in these children on the twenty-eighth day. In their hands the suggested method was less effective than routine antitoxin therapy, since one of their patients developed diphtheria during the course of the attempted duplex immunization. A similar challenge was reported by Gundel and König,[5] who found that a combined active-passive immunity is only occasionally possible in laboratory animals, and then only if a proper quantitative balance is maintained between injected antiserum and toxoid doses. They found so many individual variations in this quantitative relationship, however, as to render duplex "blitzimmunization" impractical in clinical medicine.

Fjord-Nielsen, however, alleges that the duplex method may be rendered clinically feasible by interposing a three- to seven-day time interval between antitoxin and toxoid injection. Even with a time interval as short as three days, a prophylactically adequate autogenous immunity may develop. With the recommended seven-day time interval, antitoxin formation is equal to that in control animals. The possible clinical value of the new duplex technique was under investigation at the time of the Nazi invasion of Denmark.

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1 Davis III, N. S.: Coronary Thrombosis Without Pain, J. A. M. A., 98:1806 (May 21), 1932.
2 Blumgart, H. L., Schlesinger, M. J., and Davis, David: Studies on the Relation of the Clinical Manifestations of Angina Pectoris, Coronary Thrombosis and Myocardial Infarction to the Pathologic Findings, Am. Heart Jour., 19:1-91 (Jan.), 1940.
1 Fjord-Nielsen, I.: Ztschr. f. Immunitätsforsch., 97:306 (Jan.), 1940.
2 Smith, Th.: J. Exp. Med., 11:241, 1909.
3 Schmidt-Burbach, A., and Dehmel, H.: Zentralbl. f. Bakt., 140:237, 1937.
4 Frey, L., and Schmid, E.: Ztschr. f. Immunitätsforsch., 95:486, 1939.
5 Gundel, M., and König, F.: Ztschr. f. Immunitätsforsch., 92:235, 1938.